

WHAT IS CLAIMED IS:

- 1 1. A method for prioritizing, comprising:
 - 2 receiving a set of requests from a set of contacts to be connected to a recipient;
 - 3 generating a first priority level score for each request based on an acoustical
 - 4 analysis of a contact speech signal within the request;
 - 5 generating a second priority level score for each request based on a keyword
 - 6 analysis of the request;
 - 7 combining the priority level scores for each request into a combined priority
 - 8 level score;
 - 9 prioritizing the requests within the set of requests based on their respective
 - 10 combined priority level scores; and
 - 11 routing to the recipient that request, from the set of requests, having a highest
 - 12 combined priority level score.
- 1 2. The method of claim 1, wherein the recipient is an operator.
- 1 3. The method of claim 1, wherein receiving includes:
 - 2 recording a message from a contact.
- 1 4. The method of claim 3, wherein recording includes:
 - 2 recording speech signals from the contact while the contact is on-hold.
- 1 5. The method of claim 1, wherein:
 - 2 the requests are messages; and
 - 3 routing includes sending the operator a message having a highest combined
 - 4 priority level score.

- 1 6. The method of claim 5, wherein:
2 the message is an e-mail message.
- 1 7. The method of claim 1, wherein:
2 the requests are in a form of a set of contacts waiting on-hold; and
3 routing includes connecting the operator to an on-hold contact having a highest
4 combined priority level score.
- 1 8. The method of claim 1, wherein generating the first score includes:
2 identifying acoustic features within the speech signal corresponding to a set of
3 predefined emotions;
4 setting the first score to a higher value if the acoustic features correspond to a
5 first sub-set of the predefined emotions; and
6 setting the first score to a lower value if the acoustic features correspond to a
7 second sub-set of the predefined emotions.
- 1 9. The method of claim 8, wherein:
2 the predefined emotions include anger and frustration.
- 1 10. The method of claim 1, wherein generating the second score includes:
2 searching the request for a set of predefined keywords;
3 setting the second score to a higher value if the request includes a predefined
4 number of a first predetermined subset of the keywords; and
5 setting the second score to a lower value if the request includes a predefined
6 number of a second predetermined subset of the keywords.

1 11. The method of claim 10, wherein:

2 the predefined keywords include “urgent”.

1 12. The method of claim 1, wherein generating the second score includes:

2 searching the request for a set of predefined business relevance keywords;

3 setting the second score to a higher value if the request includes a predefined

4 number of a first predetermined subset of the business relevance keywords; and

5 setting the second score to a lower value if the request includes a predefined

6 number of a second predetermined subset of the business relevance keywords.

1 13. The method of claim 12, wherein:

2 the predefined business relevance keywords include: a service contract.

1 14. The method of claim 1, further comprising:

2 generating a third priority level score for the request based on a contact-

3 assigned priority level for the request.

1 15. The method of claim 14, wherein generating the third score includes:

2 searching the request for a contact-assigned priority level selected from a set of

3 predefined priority levels; and

4 setting the third score equal to one of a set of predetermined priority level

5 scores based upon the contact-assigned priority level.

1 16. The method of claim 15, wherein:

2 the predefined priority levels include: “high” and “low”.

1 17. The method of claim 1, wherein combining includes:

2 weighting the confidence scores using ground truth data.

1 18. The method of claim 1, wherein;

2 the scores are statistical confidence scores; and

3 combining includes, multiplying together the priority level confidence scores.

1 19. The method of claim 1, wherein:

2 the scores are statistical confidence scores; and

3 combining includes, combining the priority level confidence scores according

4 to the following formula:

5
$$S = \sum_{j=1}^N r_j p_j$$
 (where N is a total number of classifiers, r is a weight assigned

6 to classifier j, and P_j is a confidence score generated by Classifier j).

1 20. The method of claim 1, wherein:

2 the scores are statistical confidence scores; and

3 combining includes, combining the confidence scores from each classifier for

4 each demographic characteristic according to the following formula:

5
$$S = \prod_{j=1}^N p_j^{r_j}$$
 (where N is a total number of classifiers, r is a weight assigned

6 to classifier j, and P_j is a confidence score generated by Classifier j).

1 21. The method of claim 1, further comprising:

2 skipping the generating the second priority level score and the combining the
3 priority level scores, for a new request, if the first priority level score for the new
4 request is already greater than a current highest combined priority level score; and
5 setting the combined priority level score for the new request equal to the first
6 priority level score.

1 22. The method of claim 1, further comprising:
2 identifying computational resources required to calculate each of the priority
3 level scores;
4 generating priority level scores for a new request hierarchically beginning with
5 a priority level score requiring a least amount of computational resources; and
6 stopping generation of the priority level scores once the combined priority
7 level score for a new request exceeds a current highest combined priority level score.

1 23. The method of claim 1, wherein combining includes:
2 using a neural net to combine the priority level scores.

1 24. The method of claim 1, wherein receiving includes:
2 receiving a set of requests from a set of customers to be connected to an
3 operator at a call center.

1 25. A method for prioritizing, comprising:
2 receiving a set of requests from a set of contacts to be connected to an
3 operator;
4 generating a first priority level score for each request based on an acoustical
5 analysis of a contact speech signal within each request;

6 identifying acoustic features within the speech signal corresponding to a set of
7 predefined emotions;
8 setting the first score for a request to a higher value if the acoustic features
9 correspond to a first sub-set of the predefined emotions;
10 setting the first score for the request to a lower value if the acoustic features
11 correspond to a second sub-set of the predefined emotions;
12 generating a second priority level score for each request based on a keyword
13 analysis of each request;
14 searching each request for a set of predefined keywords;
15 setting the second score for the request to a higher value if the request includes
16 a predefined number of a first predetermined subset of the keywords;
17 setting the second score for the request to a lower value if the request includes
18 a predefined number of a second predetermined subset of the keywords;
19 generating a third priority level score for each request based on a contact-
20 assigned priority level to the request;
21 searching each request for a contact-assigned priority level selected from a set
22 of predefined priority levels;
23 setting the third score for the request equal to one of a set of predetermined
24 priority level scores based upon the contact-assigned priority level;
25 combining the priority level scores for each request into a combined priority
26 level score;
27 prioritizing the requests within the set of requests based on their respective
28 combined priority level scores; and
29 routing to the operator that request, from the set of requests, having a highest
30 combined priority level score.

1 26. A computer-usable medium embodying computer program code for
2 commanding a computer to prioritize, comprising:
3 receiving a set of requests from a set of contacts to be connected to a recipient;
4 generating a first priority level score for each request based on an acoustical
5 analysis of a contact speech signal within the request;
6 generating a second priority level score for each request based on a keyword
7 analysis of the request;
8 combining the priority level scores for each request into a combined priority
9 level score;
10 prioritizing the requests within the set of requests based on their respective
11 combined priority level scores; and
12 routing to the recipient that request, from the set of requests, having a highest
13 combined priority level score.

1 27. A system for prioritizing, comprising a:
2 means for receiving a set of requests from a set of contacts to be connected to
3 a recipient;
4 means for generating a first priority level score for each request based on an
5 acoustical analysis of a contact speech signal within the request;
6 means for generating a second priority level score for each request based on a
7 keyword analysis of the request;
8 means for combining the priority level scores for each request into a combined
9 priority level score;
10 means for prioritizing the requests within the set of requests based on their
11 respective combined priority level scores; and

- 12 means for routing to the recipient that request, from the set of requests, having
- 13 a highest combined priority level score.
- 14